

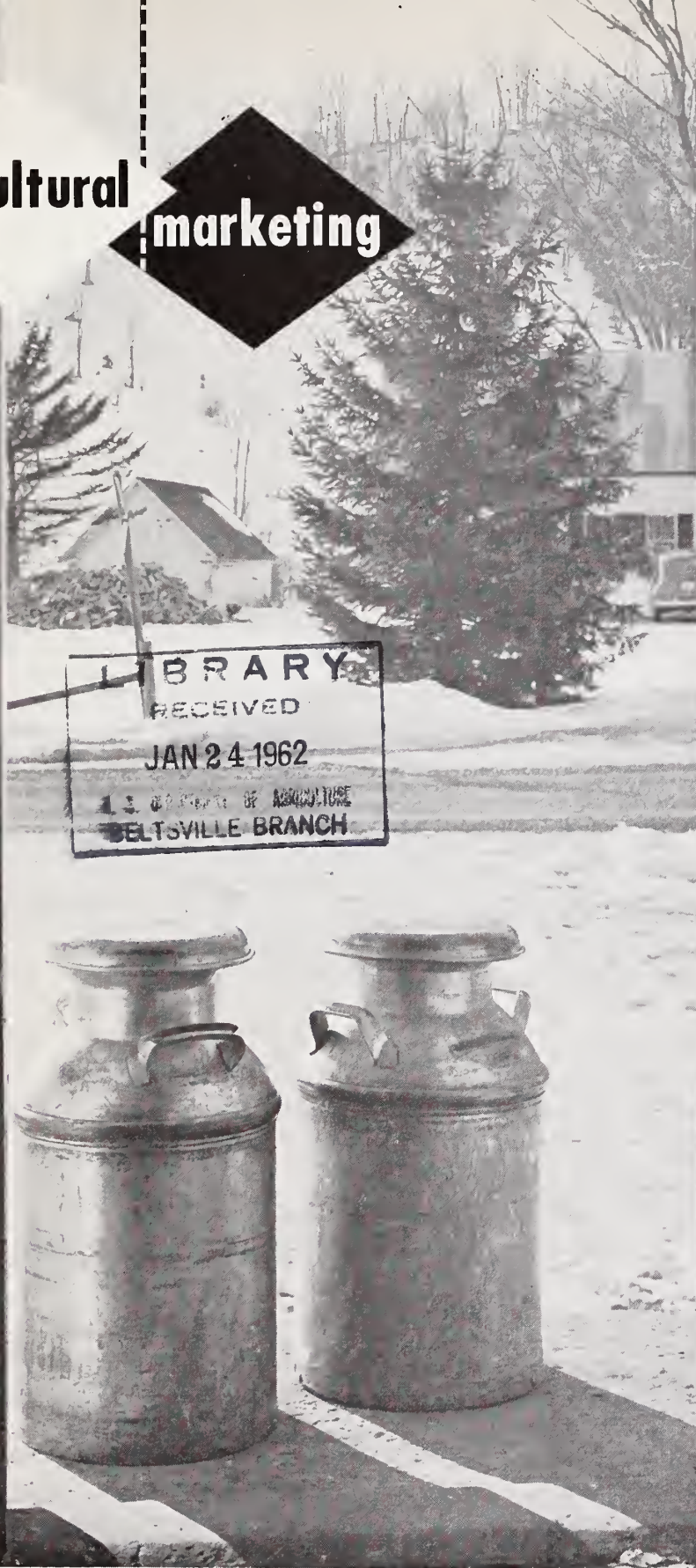
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marketing**





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December 1961

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## Cover page

For many parts of the Nation the happy time of Christmas is only a couple of snowdrifts away. And the white hand of winter lies approvingly upon the rich harvested acres of the good earth.

December should be a time for reflection, when tillers of the soil can sit back with pride and enjoyment, knowing their long hours of labor in the fields have paid off good dividends. And not only that, but their abundant harvests have helped to feed the needy and undernourished, not only in their own communities, but in the far reaches of the world.

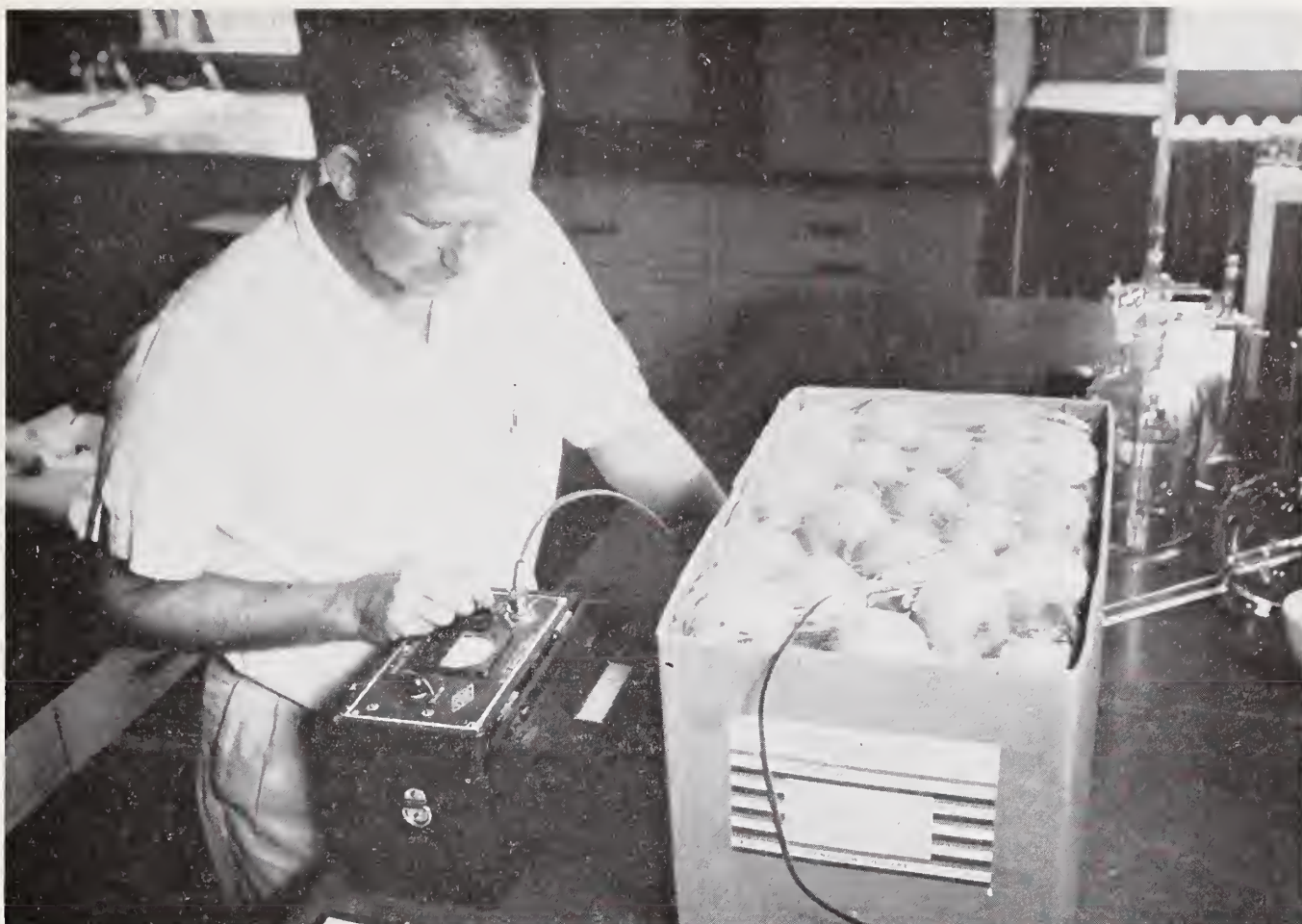
December is a month for merriment—a pause which lifts the heart and brightens the countryside with the welcome arrivals of families and friends. And who does not listen eagerly again for the sound of fir and spruce and pine trees falling, to be brought inside, near the hearthfire, to greet the year's most famous and generous old man?

Editor, MILTON HOFFMAN

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Research has been a key to marketing work for past 100 years. It has received even more emphasis as a result of Agricultural Marketing Act of 1946, which provides for continuous research to improve handling, storage, processing, transportation and distribution.

## A Century of Marketing Research and Service

by WAYNE D. RASMUSSEN

**A**LMOST a hundred years ago, the U. S. Department of Agriculture's first annual report contained an article advising millers how to make better flour. Since then, the Department has become more and more important as a research and service agency in the marketing of farm products.

Signed by Abraham Lincoln on May 15, 1862, the law establishing the Department directed the new agency to acquire and diffuse "useful information on subjects connected with agriculture in the most general and comprehensive sense of that word." Even then, leaders knew that marketing was a vital part

of the picture. Isaac Newton, the first Commissioner of Agriculture, stated in his first report that among the conditions essential to the progress of agriculture was "the continued and increased demand for our products, both at home and abroad."

For the next 40 years, occasional studies relating to the improvement of handling, processing, and marketing farm products appeared. But the work was not on a systematic basis. Some of the farm organizations and trade associations pointed out the need for more effort in this area. Little, though, was done until 1901, when the Industrial Commission, set up by Congress in 1898 to conduct an investigation of economic problems, issued its report on the distribution of farm products. This 508-page report covered most aspects of agricultural marketing. The Commis-

sion hoped that it would "form a basis for intelligent analysis, useful alike to the legislator, the farmer, and the business man."

In 1912, Congress asked the Secretary of Agriculture to report on marketing practices, on marketing work currently carried on in the Department, and on future possibilities for useful work. The immediate result was an item in the next appropriation bill "to enable the Secretary of Agriculture to acquire and to diffuse among the people of the United States useful information on subjects connected with the marketing and distribution of farm products." The Office of Markets was established on May 16, 1913, to carry out this assignment. Since then, marketing work has been carried on in many different Departmental agencies continuously.

The first projects of the new office

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The meat grading service, performed only on request, first began in 1927.

were: study of cooperative marketing; surveys of supply and demand; study of methods and cost of distribution; study of transportation problems; investigation of practicability, methods, and costs of a general news service; and cotton handling and marketing investigations. Some tangible results were achieved during the first year.

Marketing work in the Department of Agriculture early developed along three lines: regulation, information, and research. It became obvious after a few years that marketing research and regulation were not a revolutionary cure-all but that efficient carrying out of each method or plan that applied to a particular situation would result in the better distribution of farm products with consequent benefits to producer, distributor, and consumer.

The first regulatory activity of the Department, the inspection of meat and livestock offered for export, was directly related to promoting marketing abroad. In the 1880's, a number of European countries banned American meat and livestock on the grounds that it was diseased. As a result of this, the Bureau of Animal Industry was established in 1884 to fight animal disease, and a meat and livestock inspection act was passed in 1890. Later, the law was modified to provide for the inspection of all meat in interstate and foreign commerce.

The market news service, the major informational aspect of marketing work, was established to provide quick, accurate reporting of market conditions for the benefit of farmers, distributors, and consumers.

More knowledge decreased the speculative risks inherent in distributing perishable farm commodities. This work began in 1915, with fruits and vegetables.

The development of standards benefited everyone concerned with the marketing process. Standards must be revised periodically to take care of changing market demands and of new types and varieties of products.

Cotton standards may be mentioned as an example of the need for, and development of, such activities. Cotton has been classified according to various standards since about 1800, but with little uniformity among markets. In 1874, a convention of cotton exchanges adopted fixed standards. But the New York Exchange was the only one to adhere to them over a period of years.

In 1907, Congress appropriated funds to the Department for a study of standardization, with the result that a set of standards was developed. In 1914, Congress, by the Cotton Futures Act, required the use of Federal standards in trading in cotton futures.

Standards have been developed for a number of commodities. Their use is mandatory in some cases and optional in others. The Standard Barrel Act of 1915, the Standard Containers Act of 1916, and other legislation established standard units of measurement for many agricultural products.

**R**ESearch has been a key to marketing work throughout the past 100 years. It has received even more emphasis in the past 15 years as a result of the passage of the Agricultural Marketing Act of 1946.

That Act's basic purpose was to provide continuous research to improve marketing, handling, storage, processing,

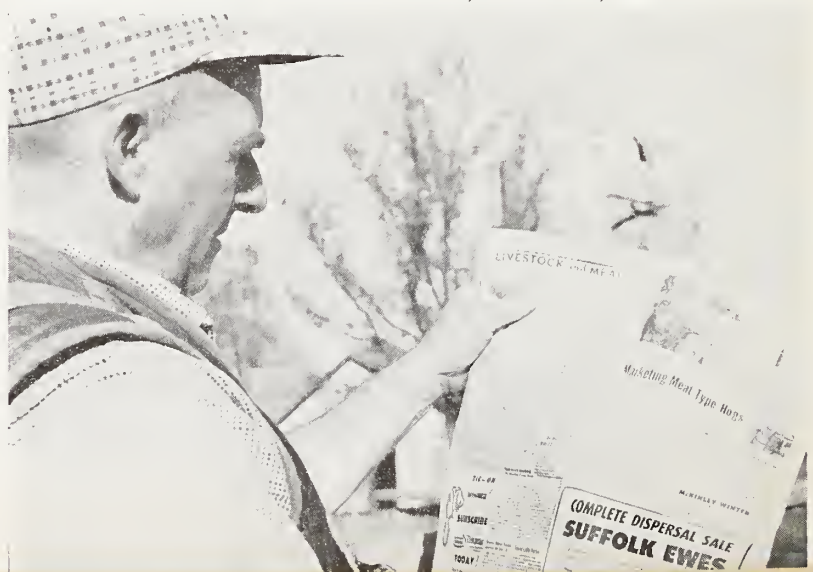
transportation, and distribution of agricultural products. This broad grant of authority was to be carried out in cooperation with producers, industry organizations, and others.

The marketing research projects undertaken are geared very closely to the needs of the groups most concerned. The Act of 1946 established an overall national advisory committee, representing Government, producers, and industry. This committee advises on general policy, while commodity and functional committees advise specifically on particular research projects.

Over the years, marketing research and service activities have helped make better agricultural products available to more people. Many other Departmental marketing programs have had the same effect. These include work on foreign markets by the Foreign Agricultural Service, assistance on cooperative marketing by Farmer Cooperative Service, work on timber marketing by the Forest Service, educational activities on marketing problems by the Extension Service, the regulation of commodity exchanges by the Commodity Exchange Authority, and the distribution of commodities through the school lunch and relief programs of the Agricultural Marketing Service.

During the past hundred years, marketing research and service programs have indeed moved from a minor to a major place in the work of the Department. The next century will see a solution to many problems which seem insoluble today. But whatever the problems, the Department of Agriculture will continue to work with producers, distributors, and consumers to see that Americans have the foods they need and want, where and when they want them.

The market news service was established to provide quick, accurate reporting of market conditions for the benefit of farmers, distributors, and for consumers.



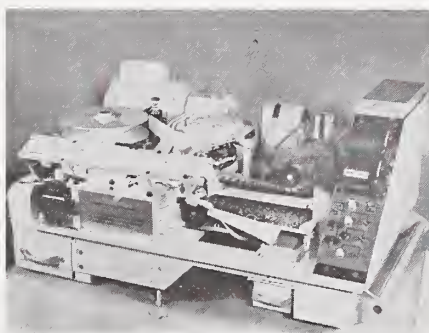
Developed by  
Agricultural  
Marketing  
Service  
researchers, a new

## MACHINE DETECTS INSECTS IN GRAIN

ANOTHER multimillion dollar saving to the American grain industry may soon come from USDA laboratories. Marketing researchers from the Agricultural Marketing Service have built, and are now preparing to field-test, a machine to detect the presence of insects in grain.

The AMS machine, developed by entomologist N. M. Dennis and agricultural engineer R. W. Decker, may play an important role in prevention of insect losses—which run over \$300 million worth of grain annually. It will deal with one of the toughest groups of insects to find: those hidden inside of the kernels.

So far, many other methods used have not been too successful in spotting all the insects which make up the very shy quarry of the machine. Also, many commercial requirements rule out the greater use of such methods.



For instance, complexity, length of time required, inconsistent performance, and high initial and operating costs are drawbacks to some methods. Often, a highly trained and experienced operator is necessary. Also, some present methods are subjective, which expose large lots of valuable grain to the risk of human error in evaluations of insect infestation.

There is little risk of a grain handler losing money because of mistakes by the operator of this AMS machine. Little training and experience are required to run it. The one subjective risk is the simple task of counting the number of spots on a piece of paper fed through the machine.

The machine performs well in both large and small operations. The unit to be field-tested is portable—about the size of a large suitcase, although of course it weighs considerably more—about 250 pounds. Original, as well as operating costs, are commercially practical.

This machine is also fast, handling about 300 kernels a minute. Accurate results are available almost immediately. Fortunately, it has given highly uniform performance in the AMS laboratory.

This machine even outperformed a commercially-used X-ray detector in the laboratory in cases where it was hard to determine whether grain was infested. It is particularly superior to the X-ray method in detecting insects in early stages of development. And cracked, broken, or otherwise damaged kernels do not interfere with production of accurate results.

Grain with a moisture content exceeding 16 percent does give a general reaction, however. Molds, which sometimes are carried on such moist grain, also throw off accurate results.

Although the step-by-step story of the machine's development may seem highly intricate to anyone but a scientist or engineer, the AMS unit is actually fairly simple. Essentially, the machine reveals the insects' presence by crushing them against filter paper treated with an organic chemical. Purple spots appear on the paper when the insects' body juices come in contact with the treated paper.

Researchers first determined that the chemical gave a positive and sensitive reaction to insects, and then they developed a method of treating filter paper with the chemical.

Next, a machine was built which would fulfill the requirements of a commercially practical method of using the new detection principle. AMS researchers designed the treated filter paper in a roll about the size of a roll of paper commonly used in an adding machine or cash register.

The paper is threaded through rollers in the machine that fold it in a V-shaped ribbon. As a second fold is formed, the ribbon winds under an automatic feeder, which drops kernels in the paper's trough, just before the fold is completed. The ribbon then winds through a series of rollers and attachments which crush the grain within the folded paper, unfold the tape, and scrape off the crushed grain. A heater in the machine develops purple spots on the paper that result from body fluids of any insect that may be present in the grain.

In the next step in the assembly-line type of process, the paper passes under a viewer in the machine, where the

*(Continued on page 16)*



# A New Cost Accounting System for Poultry Processors

by ROBERT M. CONLOGUE

OF ALL classes of food processors in the U. S., probably no group has more reason to be proud of their efficiency than the 600 poultry processors who handle the bulk of the nation's broiler and turkey production. Yet many poultry dressing plants still operate with inadequate cost accounting systems. Improved cost accounting would make it possible for the plant manager to measure his costs of operation with greater accuracy and to find additional ways for making money-saving changes.

The recent history of poultry processing might be divided into two periods:

The author is a staff member of the Marketing Economics Research Division, Economic Research Service.

the "grow big or die" period, and now, the "grow efficient or die" period. In the first period, processing was decentralized from cities to country points, and thousands of small plants were replaced by about 600 production-line operations which handle most of the Nation's broilers and turkeys.

Today's poultry industry is characterized by intense competition among the big operators.

Plant managers recognize the situation more clearly than anyone else, and each is eagerly searching out ways of increasing the efficiency of his plant and its operations. Yet many of these plant managers are conducting their research without adequate tools for measuring efficiency and for pointing out the places where income is low or money is being lost.

In one plant studied by USDA economists, indications were that the manager made little use of records for measuring the capacity of his production lines or for discovering if they were operating close to capacity. A check of one day's activities, when there was no stoppage for lack of birds, showed that the plant as a whole was operating at 80 percent capacity, but for one class of birds the processing line operated at only 60 percent of capacity. The manager apparently overlooked this before, but now keeps a daily report on this operation.

In another plant, where approximately 30 percent of the birds were being cut up, the manager thought there was an exceptionally heavy shrink in the cut-up department, based on average weights. After exploring the probable causes, he set up scales and weighed the birds going into the cut-up department. He discovered the shrink was no greater than average because the lower grade and lighter-than-average birds were going into the cut-up department. By using average figures which included the heavier birds as well, he found that total bird weight for the cut-up department was overestimated.

These, as well as many other observations in poultry dressing plants of all sizes—and in all the major producing areas—led to development of a system

of uniform cost accounting for poultry processors.

This system will enable plant management to calculate costs on every phase of their operations as often as desired with greater accuracy.

Through records kept by supervisors as part of their regular duties, management can keep itself up-to-date on plant operations, and three important factors: plant productivity, bird yield, and processing yield.

In determining productivity, the manager or accountant starts by calculating the number of birds which would have been processed if all dressing hangers had been used and no stoppages had occurred during operating hours. This is "bird capacity." The number of birds actually processed as a percentage of bird capacity provides the figure for "plant productivity."

Of the birds placed on the shackles, what percentage actually was salable? This is "bird yield." How much did the live bird weigh? What did it weigh after it was processed and ready to sell? These figures converted to percentage give the "processing yield." With these measures, management can discover whether the plant is operating efficiently, and can pinpoint many problems.

When production and efficiency are measured regularly, management can compare them with their previous figures and, if available, with averages for the industry as a whole. If a number of processors used the uniform accounting system, it would be possible to develop averages on costs and efficiency for the entire poultry industry.

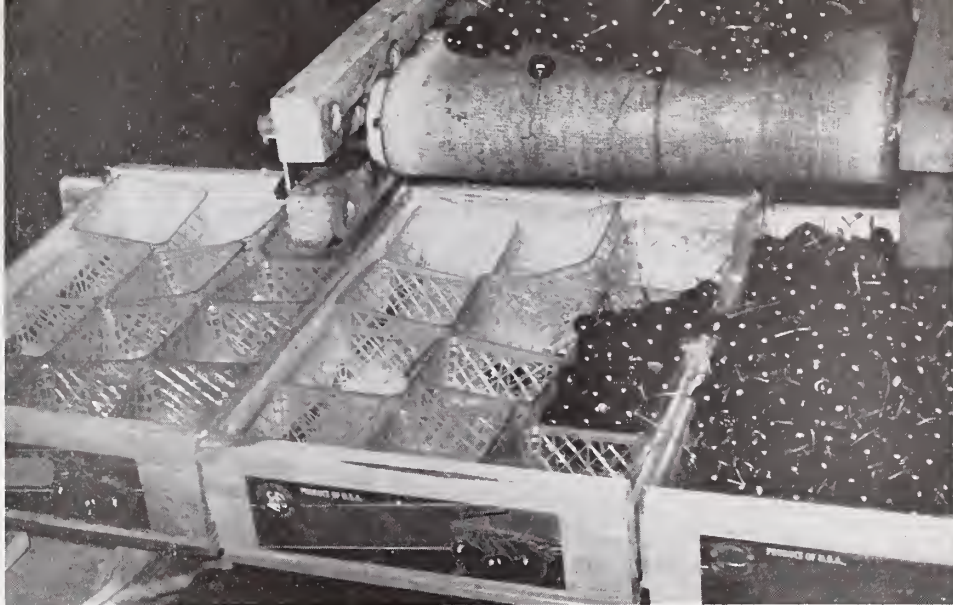
In most businesses the biggest slice of gross income goes to pay operating costs. For the poultry processor, the cost of labor, overhead, and materials includes birds, ice, and packing supplies. Keeping track of these costs and production figures allows a frequent comparison of costs per pound of output.

Detailed information on this subject—including sample accounts of operations—is contained in *Agricultural Handbook 213, "A Guide to Uniform Cost and Financial Accounting for Poultry Processors."* Single free copies are available from USDA, Office of Information, Washington 25, D. C.



Thousands of small plants have been replaced by 600 production-line operations which handle most of the Nation's poultry.





## A PINT PACKAGE FOR CHERRIES

by JAMES B. FOUNTAIN

"An extremely attractive package."  
 "It provides good ventilation."  
 "It prevents pilferage."  
 "It is selling very well."

These are some of the comments which greeted the recent appearance of experimental consumer packages of cherries put out by a Washington State shipper cooperating with AMS marketing researchers. Food stores which tried them ordered more.

Back in 1958 and 1959 cherries were experimentally marketed in plastic baskets but the reaction of the trade was not favorable. The package was rectangular and held 1¾ pounds of cherries. Receivers at both wholesale and retail levels felt that this was a larger quantity than most consumers wanted to buy. Moreover, no provision was made to cover the cherries.

To overcome these objections, tests were undertaken in 1961, using a square pint plastic basket, a polyethylene box liner and a slitted polyethylene film cover to preserve the harvest freshness of the cherries. Nine full carloads were shipped to an eastern food chain.

In the packing plant, the polyethylene liner with the top left open was fitted into a shallow wood box which served as a master container. A dozen plastic baskets were placed tight together in

the box in a single layer, 4 long and 3 wide. Also included in the master container was a supply of slitted polyethylene film caps for use at the retail level to cover the packaged cherries. The box was placed under the end of the conveyor belt which served the packing line. Cherries 12-row size and larger poured from the belt, jumble filling all the baskets and forming a compact layer over them.

When the net weight reached 14 pounds the full master container was replaced by another box and basket assembly.

For economy, the box was made with 3/16-inch slatted bottom and sides nailed to sturdy ¾-inch ends. The lid was of solid fiberboard. This box carried well in transit when it was loaded sideways in the rail cars and impact pressures were exerted on the heavier ends. Lengthwise loading led to many damaged containers.

**T**HE handling and merchandising of the cherries were not uniform in the retail stores checked by AMS packaging specialists. Most frequently upon receipt of the cherries, store personnel weighed each pint basket to 15 ounces and fitted the slitted cap to the four corners of the basket.

Cherries in excess of requirements for the 12 baskets were either put in extra baskets supplied by the shipper or sold in bulk. In some stores the entire 14 pounds of cherries were heaped in the 12 baskets.

The slitted film caps frequently pulled loose when customers handled the packages. This was true especially when the baskets were heaped high rather than filled level with the top. With no caps, or with loose tops, the packages lost attractiveness and protection against handling and pilferage. In many stores the produce clerks solved the problem by replacing the slitted cap with a 10-inch square of cellophane fitted down over the top of the basket and secured with a rubber band.

With the exception of the insecure cap, store management and employees expressed enthusiasm for the new cherry package. The cherries arrived attractively fresh and in extremely good condition, they displayed well, and they sold well. The pint basket appeared to hold just about the right quantity of cherries for the average consumer.

The material and direct labor cost for the 14-pound plastic basket pack was 4.2 cents a pound compared with 4.5 cents for the conventional 15-pound double-row face pack and 2.0 cents for the 20-pound loose pack of bulk cherries.

These test shipments constituted another effort of the packer-shippers working in cooperation with AMS to develop an economically suitable consumer package. The pint basket shows promise but additional work is necessary to develop a more efficient and more attractive cap or overwrap and a speedy method of applying it at shipping point or in retail stores.

The author is in charge of AMS packaging and container research field station at Yakima, Wash. Joseph Clarke assisted with the study.



## Maintaining the Fresh Quality in Pro

by ROBERT K. BOGARDUS and JACOB M. LUTZ

IT'S NOT generally the price tag on today's fruits and vegetables that alerts a careful shopper's eye. Oftener, it's the garden-fresh quality in those produce items that turns the sale.

Therefore, maintaining this harvest-time quality requires the careful attention of everyone involved in the marketing system.

Since wholesale distributors receive carloads of produce that often require distribution over a period of one day to a full week, proper handling at the wholesale level is vitally necessary to maintain top-flight quality not only at the retail store, but at home as well.

For instance, wholesalers should provide 32°F. storage for about half the produce they handle. Enough refrigeration capacity should be installed to maintain a year 'round temperature of 32°F. and a relative humidity of 90 percent. Higher temperatures and lower humidities for the more perishable items will accelerate quality loss and increase wastage.

Cold storage rooms should be soundly engineered and adequately equipped. This means proper insulation, effective distribution of refrigerated air and sensitive, properly located controls, which will help to achieve the desired storage conditions. Air spaces between adjacent loads of produce as well as between the produce and storage room walls will permit positive air circulation, and avoid the occurrence of so-called "hot spots."

And, if blowers are used, the air should be properly directed to avoid dehydration brought about by the impingement of high velocity air on stored produce.

Mr. Bogardus is an industrial engineer in the Transportation and Facilities Research Division, AMS. Dr. Lutz is Assistant Chief, Horticultural Crops Branch, Market Quality Research Division, AMS.

### STORE AT 32° F. TEMPERATURE RELATIVE HUMIDITY OF 90 PERCENT

#### Fresh Fruit

<i>Apples</i>	<i>Peaches</i>
<i>Apricots</i>	<i>Pears</i>
<i>Blackberries</i>	<i>Persimmons</i>
<i>Cherries</i>	<i>Plums</i>
<i>Coconuts</i>	<i>Pomegranates</i>
<i>Cranberries</i>	<i>Prunes</i>
<i>Dates</i>	<i>Quinces</i>
<i>Dewberries</i>	<i>Raspberries</i>
<i>Figs</i>	<i>Strawberries</i>
<i>Nectarines</i>	<i>Tangerines</i>
<i>Oranges</i>	

#### Fresh Vegetables

<i>Artichokes</i>	<i>Horseradish</i>
<i>Asparagus</i>	<i>Kohlrabi</i>
<i>Beans, Lima</i>	<i>Leeks, green</i>
<i>Beets</i>	<i>Lettuce</i>
<i>Broccoli</i>	<i>Mushrooms</i>
<i>Brussels sprouts</i>	<i>Onions, green</i>
<i>Cabbage</i>	<i>Parsnips</i>
<i>Carrots</i>	<i>Peas, green</i>
<i>Cauliflower</i>	<i>Radishes</i>
<i>Celeriac</i>	<i>Rhubarb</i>
<i>Celery</i>	<i>Rutabagas</i>
<i>Corn, sweet</i>	<i>Spinach</i>
<i>Endive</i>	<i>Salsify</i>
<i>Escarole</i>	<i>Squash, yellow summer</i>
<i>Garlic, dry</i>	<i>Turnips</i>





## *Produce in Wholesale Warehouses*

Enough refrigerated coil surface should be provided to allow a differential of only a few degrees between the coil and air temperatures while still providing adequate refrigeration. A difference of as little as 2°F. would be desirable.

Neither desirable air temperatures nor humidities can be maintained if excessive air exchange occurs between the cold storage room and warmer areas. Operators should consider the use of air curtains when doors to the cold room must be opened often, or for prolonged periods.

Some wholesalers have pioneered the use of a single cold storage room instead of providing separate dry and wet cold storage rooms. Modern packaging, accurate temperature controls, maintenance of high humidity and rapid turnover of the stored product make it possible, as well as practical, to operate with a single well-refrigerated room.

While not all fresh fruits and vegetables can be stored at 32°F. controlled storage conditions are desirable for all. In recent years, quality-conscious wholesalers have constructed warehouses that provide controlled temperature in their general storage areas. The best temperature for this area is 50°F. Lower temperatures may cause damage, while higher temperatures cause quality deterioration. Wholesalers using a conditioned general storage room claim reduced shrinkage in the warehouse and a longer shelf life in the stores.

Commodities such as green tomatoes, bananas, (and sometimes pears), though, require special temperature conditions for ripening.

Biological scientists have determined the best storage conditions. Engineers have developed warehouse plans and selected refrigeration equipment capable of providing the temperatures and levels of humidity required. Wholesalers utilizing this information can be of great help in the all-important job of keeping the fresh quality in fruits and in vegetables.

### STORE AT 50° F. TEMPERATURE RELATIVE HUMIDITY OF 80 TO 85 PERCENT

#### Fresh Fruits

<i>Lemons</i>	<i>Olives</i>
<i>Limes</i>	<i>Papayas</i>
<i>Mangoes</i>	<i>Pineapples</i>

#### Fresh Vegetables

<i>Beans, green</i>	<i>Peppers, sweet</i>
<i>Cucumbers</i>	<i>Potatoes</i>
<i>Eggplants</i>	<i>Pumpkins</i>
<i>Melons</i>	<i>Squash, hard shell</i>
<i>Okra</i>	<i>Sweet potatoes</i>
<i>Onions, dry</i>	<i>Tomatoes, ripe</i>
<i>Onion sets</i>	

### COMMODITIES REQUIRING SPECIAL CONDITIONS

<i>Bananas for ripening</i>
<i>62° to 68° F., 90 to 95 percent</i>
<i>Bananas, ripe (for holding)</i>
<i>56° to 60° F., 90 to 95 percent</i>
<i>Green tomatoes, for ripening</i>
<i>55° to 70° F., 85 to 90 percent</i>
<i>Pears, for ripening</i>
<i>60° to 65° F., 85 to 95 percent</i>

# Changing Times for

## THE IMPORTANT FEED MIXING INDUSTRY

by CARL J. VOSLOH, JR.

**L**ARGER FARMS, and the ever-increasing integration of agricultural production, are bringing about numerous changes in the important feed mixing industry. Today more and more feed manufacturers and retailers are providing bulk delivery service, selling direct, and custom-mixing feeds for the Nation's farmers.

In a recent Economic Research Service survey the firms studied indicated that competition is affecting the use of contracts and the kind of financing offered in the feed business. Manufacturers and retailers said they offered short-term credit and discounts, and used account-reducing interest charges in their business operations. Although most were reluctant to provide production credit, they did so because of competition.

Many firms guaranteed bank and PCA credit by backing the payments of their patrons rather than providing the loans themselves. When this credit practice was used, at least some marketing and production supervision from the company was included. The availability of free credit for stated periods was generally tied to the length of the production period.

As in farming, size played an important part in the nature of a feed mixing firm's operations. Of the firms surveyed, 85 percent retailed feeds. One-third of the firms were small-volume operators selling less than 500 tons a year. Roughly, two-thirds of the retailers surveyed sold mixed feeds on

their pre-mixes, and about 70 percent of them mixed their own feeds. These firms usually had larger total volumes and sales, with a smaller proportion of custom-mixed feeds.

The type of feed has an important bearing on whether a pre-mix or supplement is used in mixing. Some feeds contain so many ingredients, including drugs, and in such small quantities, that small firms can't justify the cost of the equipment needed to mix their own pre-mix or supplement.

On-the-farm mixing is increasing today, especially on farms with large-

ers, and other agricultural supply businesses selling mixed feeds as part of a service program for their customers. Their feed sales were complementary to other business enterprises, and they tended to retail all types of feed—for poultry, swine, and livestock—about equally.

It was found that most firms which retailed a mixed feed volume of 3,500 tons a year or more, had mixing facilities and expanded services to attract new customers. The larger retailers usually were better able to serve larger farm-production units with the extra



scale feeding operations. Many farmers, particularly larger feeders, try to reduce their feed costs by using their own grain and a mixed supplement. Custom-mixing, including the mobile units, ordinarily uses the farmer's own grains and formula.

Many feed mills stored farmers' grain for later use in feeding. Naturally, such a practice is greater in surplus grain regions and tends to increase the volume of custom-mixing. Charges are made to farmers for receiving, storing, grinding, and mixing with supplements.

The research indicated nearly all feed retailers must retain at least a few larger feeder customers for a profitable operation. As retail volume increases, the number of retailers involved in integration and contracts increases. In specialized poultry and livestock production areas, for instance, integration with farm production may be the only method for feed manufacturers and retailers to retain or expand their current volume of feed sales.

In this survey, small firms included many grain elevators, machinery deal-

services and credit they require. They also had full-time salesmen who handled sales contacts, service work, credit collections, and customer relations for the firm. Larger retailers, meanwhile, tended to deliver a greater proportion of their feed sales.

The geographic location of the industry appeared to influence the proportion of total feeds delivered to the farm. This, in turn, was related to the type of service competition among firms. Generally, therefore, the trend in bulk sales was up, particularly in the West, while bag feed sales were largest in the East.

The survey shows that areas with a high degree of farm specialization trend towards direct selling to feeders, which usually involves bulk delivery. In mechanized feeder operations, bulk delivery saves labor and cuts down the cost of the finished product to the farmer.

When asked about their costs, about two-thirds of the feed mill operators believed that bulk feed sales decreased per-unit feed prices. Also, around two-

*(Continued on page 16)*

The author is a staff member of the Marketing Economics Division, ERS.



# American Produce Faces Stiff Competition in LONDON'S COVENT GARDEN

by H. L. HARRINGTON and E. R. PHEIL

London's Covent Garden harbors one of the most famous fruit and vegetable markets in the world. Fruits and vegetables have been traded on this famous spot since the days when America was still a fledgling English colony.

The market's glass-roofed buildings enclose acres of stalls and shops, where fruits and vegetables from almost every corner of the world are spread out in dealers' attractive displays.

Walking through the market one can see oranges from Israel and Morocco; apples from Canada, Italy, Argentina, and Denmark; South African grapes; and lemons from Cyprus, in addition to many varieties of native fruit.

At Covent Garden's market, Belgian hothouse strawberries arrive packed in foam plastic; there one can find Chinese gooseberries (from New Zealand), passion fruit, tree tomatoes, and custard apples if one's tastes should lean to the exotic.

The market also handles large quantities of numerous American fresh fruits—apples, pears, grapes, lemons, and grapefruit, for instance.

That's why the two of us, Americans from the Agricultural Marketing Service's Federal Inspection Service, spent over 3 months in London last winter. For the European fruit market has become highly competitive, with countries like South Africa, Italy, Argentina and Canada doing their best to rapidly expand their fruit exports.

Our project, sponsored jointly by AMS and USDA's Foreign Agricultural Service, was to see what American fruit looked like when it arrived in Europe, in comparison with the condition of fruit from other countries. Also we wanted to see how our produce was accepted by the British trade.

The authors are staff members of the Fruit and Vegetable Division, AMS.

We planned to try a bit of educational work while we were at it, giving British importers a better idea of what U. S. grades mean, and showing them how they can use our grading and inspection to help get the kinds of fruit they want.

The London market was chosen because of its large volume—the biggest in Europe—and because of the variety of countries from which it draws supplies.

In the months we spent in London, we examined nearly 2,400 samples of fruit from Covent Garden and the two smaller markets that handle the London trade, Spitalfields and the Borough Market. We compared fruit from the U. S. with fruit from all the other countries, rating all the samples by our U. S. standards.

We found that some of the U. S. fruit is still the best on the London market—but we also found that our reputation for quality is slipping badly in places.

Happily, American pears compared favorably with those from other countries; they showed relatively small amounts of decay and skin discoloration. Our lemon shipments also were rated high, with 90 percent showing no scorable defects. Only few lots of U. S. lemons showed some mold and decay.

As for U. S. apples, bruising was the greatest problem. The highest percentage of bruising was found in some Golden Delicious from the eastern U. S. Western shipments of Golden Delicious and Newtowns showed less bruising. The few lots of boxed apples averaged 6 percent bruising damage, against 3 percent damage for shipments in cartons.

We found that the typical skin discoloration on Florida grapefruit is discounted by the London dealers, long

accustomed to the bright fruit from the Mediterranean. A fourth to a third of the U. S. grapefruit shipments showed decay, with a few that ran as high as 40 percent, which required reconditioning.

Our Emperor grapes lacked color and had a generally dull appearance. In fact, less than a third of the shipments rated "Good" in appearance. Two-thirds of the shipments showed

*(Continued on page 16)*

Only top-quality U. S. fruit can successfully compete with the other fruit that is shipped into London's Covent Garden.





# AMS MARKETING RESEARCHERS AID DRY MILK INDUSTRY

by GARY KERR

Today's housewife is finding an almost 'round-the-clock kinship with Alice in Wonderland, insofar as modern research, inventions, improvements in living habits and better foods are concerned.

One of the modern items which brighten foodstores' shelves and make everyday living more efficient and economical today is the development of the instantized form of nonfat dry milk. This has proven an important factor in the widening acceptance of dry milk by consumers.



*Researcher evaluates effects on insecticides used on plant's brick walls.*

Every year foodstores are selling greater quantities of this product, which also goes to feed needy people and hungry children in many parts of the world. Only last year this Nation exported a whopping 530.4 million pounds of dry milk products.

Through happy circumstances, dry milk is a healthful product that can be kept for prolonged periods without refrigeration. And, what's more, because of its nature, it's not highly attractive to insects.

Agricultural Marketing Service researchers are helping the dry milk industry maintain a uniformly high quality product by working toward the complete protection of dry milk against insect infestation.

These marketing researchers have found that insects actually destroy very little dry milk. The principal problem is contamination, since some insects will live in the product.

Most contamination in dry milk is caused by small demestid beetles related to the carpet beetles found in the home. The larvae come to the surface of their habitat to molt, and these molted skins are the best clue to an infestation. The larvae can molt from 8 to 20 times, so the number of skins is usually more than the number of insects present.

AMS marketing researchers say that emphasis should be placed on preventing rather than controlling infestations, in order to keep the food plant completely free of insects. A primary preventive measure is good sanitation, achieved by frequent and thorough cleaning and by good housekeeping in the plant.

It is also important to keep insects out of the plant. One should make sure that doors and windows of plants and warehouses are screened or closed at all times. And fly-chaser fans should



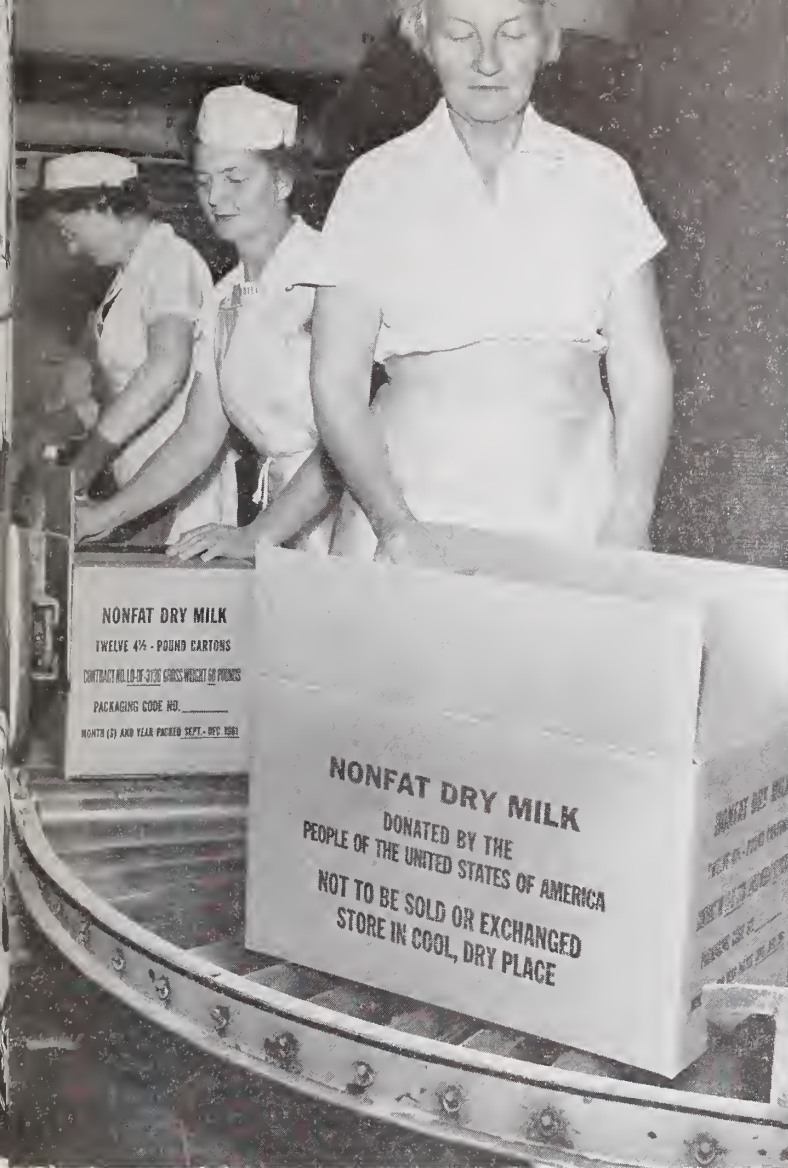
*Nonfat dry milk on production line. Packages are filled by employees in rear, double-checked for correct weight.*

be used to prevent insects from entering the plant when doors are opened for prolonged periods of time during loading. Eliminate construction faults by sealing up cracks and getting rid of dead-end spaces and wall voids. Also, inspection for insect infestation should be made at least once a month.

The final step is to apply a residual insecticide as a supplemental measure to kill any insects that may get into the plants and to prevent infestations from becoming established. Of course the insecticide can be used also to control any infestation that may already be present. The AMS scientists point out that an insecticide performs more effectively when applied in a clean plant.

As for the use of insecticides, AMS





*Individual packages of nonfat dry milk are placed in shipping containers. Sales of nonfat dry milk for household use jumped from 2 million pounds in 1948 to 200 million pounds in 1961.*



*Quality assurance has been an important factor in increased nonfat dry milk sales. Here a USDA resident grader at the plant performs one of the tests necessary to determine grade.*

marketing researchers make these recommendations:

1. Spray with a residual insecticide, such as premium grade malathion, in places where insects live or will crawl over the deposits.
2. Use aerosol for emergency treatments in areas that cannot be sprayed.
3. Blow dust into cracks and crevices difficult to reach with a liquid spray, and around electrical connections where the use of water could cause a short circuit.
4. Fumigate tightly enclosed spaces where necessary if this can be done safely.

Another problem facing manufacturers of dry milk is how to maintain the reputation and quality of the milk after it enters marketing channels.

Marketing researchers found that the only way to insure maximum protection under these conditions is to use insect-resistant packages. A properly closed fiberboard drum is one of the packages most resistant to insect invasion.

Heat-sealing the inner polyethylene liner, stitching shut the open ends of the multiwall paper bags, and gluing an overtape on the stitched end also helps reduce contamination. Sealing bags by this method has been used successfully by other food industries, but as yet the dry milk industry has not used it extensively.

Keeping insects out of packaged products has always been a problem facing the food industry. There are many reasons for this: Insects are

difficult to control, since many of them inhabit areas which are hard to reach. They can withstand adverse environmental conditions. They are abundant and are present in almost all the places where products are handled or stored. Some can live without food for long periods of time. And they resist many of the more common insecticides.

But AMS marketing researchers—measuring progress—will continue their efforts to link farmer and consumer with a completely insect-free product. And they have high hopes of success.

The author, who now attends South Dakota State College, was a student assistant in the Marketing Information Division, AMS, at the time the story was written.



# IN TIMES OF EMERGENCY

Before, during, and after—a different light is cast upon our Nation's agricultural abundance. This food is no longer "surplus" when it becomes part of our disaster feeding operations.



Above, after Hurricane Carla. Below, victims of Hurricane Esther line up for breakfast consisting of foods locally purchased by Red Cross and USDA-donated foods.



IN THE WAKE of Hurricane Carla thousands of Texans were left homeless and hungry. After flash floods hit sections of Puerto Rico, West Virginia, Alabama, and Mississippi, men, women and children were without the means to feed themselves. Before, during, and after natural disasters such as these, a different light is cast upon our Nation's agricultural abundance. This food is no longer "surplus" when it becomes part of disaster feeding operations.

When disaster hits an area, the scene is charged with tension and drama, but supplying USDA-donated food to storm victims is little more than routine for the people of USDA's Food Distribution Division. This division, part of the Agricultural Marketing Service, handles the Direct Distribution and National School Lunch Programs.

In both these programs, millions of pounds of USDA-donated foods are continuously enroute to all parts of the Nation and one or both of them always has food in or near any spot that might need an emergency feeding operation.

A lot of machinery has to swing into action to provide food to storm victims, but the U.S. Department of Agriculture, working closely with State distributing agencies, has this machinery in readiness at all times. This was very well illustrated in September of 1961 when a vicious coquette called Hurricane Carla swished her skirts through sections of Texas and Louisiana.

But even before Carla smashed her way over the coastal areas, a well-oiled cooperative Federal-State food distribution system was ready.

Hundreds of carloads of donated food were either in warehouses or in transit destined for direct distribution to needy family feeding operations. This food was made available to State and local officials, the Red Cross, Salvation Army, and other disaster feeding agencies. Any official connected with the program has the authority to make use of USDA food in an emergency.



The almost 10,000 Southwest area schools in the National School Lunch Program had storerooms stocked with donated food for the new school term. Over 3,000 of these schools are in Texas and about 1,600 in Louisiana. The thousands of pounds of food, donated by the Federal government and administered by States, was automatically available for emergency feeding.

As stated by Howard P. Davis, FDD Director, "With our Nation's ability to produce food in such great abundance, there is no reason why anyone in need shouldn't be able to receive an adequate diet." Victims of natural disaster certainly fall, at least temporarily, into the category of "needy."

As Carla flattened and flooded homes, USDA food took two general directions. First, the immediate problem of feeding evacuees in emergency feeding centers. Here, sandwich items came into play: peanut butter, canned chopped meat, butter and cheese, which needed no preparation.

Later, food was given to people returning to their ravaged homes. Items such as dry beans, corn meal, flour, lard, nonfat dry milk, rice and rolled oats were supplied also.

Officials of Food Distribution's office at Dallas, and the State Departments of Public Welfare of Texas and Louisiana, agreed on a simplified application procedure so that storm victims could get their food at the same time that they applied. Any county, or parish authority such as the judge, could get USDA foods for hurricane victims by applying to the State Department of Public Welfare.

According to John J. Slaughter, chief of FDD's Southwest area office, over 1.6 million pounds of USDA-donated food was used to feed Carla's victims. But, as is the case with normal operations, the Department only makes food available. It is up to local workers to put the food to use.

**A**N inspiring example of local workers putting our agricultural abundance to good use occurred during the Carla episode in Port Lavaca, Texas.

Early on the morning of Sunday, September 10, Mrs. Ruby Treybig, manager of the Calhoun High School cafeteria in Port Lavaca, knew where and when Hurricane Carla would hit . . . the "eye" was aimed right at Port Lavaca. She recalled hurricanes of 1942 and 1945 and knew that if Carla hit as hard as predicted, there would be

many people without homes. She also knew that many evacuees would come to the school for food and shelter.

So Mrs. Treybig got to the Calhoun school at 7:30 a.m. on Sunday morning to begin a tour of duty that was to last 36 hours nonstop.

Lights and power were off and the only water available was pouring from the sky. But with dim candle light to guide them, Mrs. Treybig, her son Wilbur, and Mr. Leaf Bales, school custodian, collected dry milk, lard, flour and butter from USDA-donated stocks on hand and set out to make nearly a thousand fresh rolls.

In less than an hour and 45 minutes, Mrs. Treybig had the rolls mixed (by hand), baked in the gas-heated oven, and ready for the hungry storm victims who were beginning to show up. "This was even faster than I usually do it when I have the big electric mixer" she said, "I must have been inspired."

When heavy feeding operations began later under Red Cross supervision, Mrs. Treybig was given immense cooperation by School Lunch people from other Calhoun County schools. Together, from this one cafeteria, these ladies and other volunteers served almost 1,000 hungry refugees during the 2-day emergency.

There were similar experiences throughout the disaster area. In 13 parishes in Louisiana, 90 schools and community centers served more than 20,000 disaster victims from supplies of 10 donated food commodities on hand in schools and welfare office warehouses. Army troops from the 24th Hospital Unit, Fort Sam Houston, Texas, workers from the Red Cross, Salvation Army, other welfare agencies, and many private volunteers pitched in wherever aid was needed.

After the hurricane subsided and life again approached routine levels, the USDA-donated food that was used for the emergency was replaced by the Department of Agriculture and distribution to regular outlets continued with little, if any, interruption.

**T**HIS distribution system that takes emergencies in stride is the product of over a quarter of a century of experience. It began in 1935 when Congress passed "Section 32" of the Agricultural Act of 1935, authorizing, among other things, the purchase and disposition of farm products that were having marketing difficulties.

In 1949 Congress again passed legis-

lation aimed at finding outlets for farm products that couldn't be sold in regular channels. Section 416 of the Agricultural Act of 1949 provides for the distribution of farm products acquired by the Government in price support activities—after sales and barter possibilities have been exhausted—to the Bureau of Indian Affairs, non-profit school lunch and summer camp programs, needy persons, charitable institutions.

Congress enacted the National School Lunch Act in 1946 permitting the Department of Agriculture to purchase and distribute commodities as well as to reimburse schools for a part of their local food costs.

Both types of programs—direct distribution to the needy (Sections 32 and 416) and the School Lunch Program—have the normal function of providing better diets and constructively utilizing our Nation's agricultural abundance. But both serve a secondary role as emergency hunger insurance against such hazards as Hurricane Carla.

USDA's food distribution system, combined with our great abundance of agricultural products, provides the American public with the assurance that if they should become "needy" because of economic disturbance, natural disaster or national emergency . . . they WILL be fed.

Using dry milk, lard, flour, and butter from USDA-donated stocks, Ruby Treybig, manager of high school cafeteria, makes a thousand fresh rolls for storm victims.



## Plentiful Foods for January

**G**RAPEFRUIT and honey—from two bumper crops—are a tasty go-together to highlight the New Year's list of foods which will be in plentiful supply in January.

Other items—all welcome runnersup—are apples, from a crop some 17 percent larger than a year earlier, and frozen and canned red cherries and cherry products.

The storage crop of potatoes is large, too, something like 13 percent greater than the previous year. And there are plenty of pecans to draw from, since the crop broke all records. Broiler-fryers continue abundant, too, and remain an excellent buy.

And some areas will have plenty of dry pea beans, pinto beans, and lamb for January shoppers.

### FEED MIXING

*(Continued from page 10)*

thirds thought that bulk sales added to the cost of the services. Generally, as bulk distribution increased, the large volume local feed dealers benefited the most.

A copy of the full report, MRR506, is available free from the Division of Information, Agricultural Economics, USDA, Washington 25, D. C.

### COVENT GARDEN

*(Continued from page 11)*

decay, ranging as high as 50 percent, and 10 percent of the samples also showed shriveled berries.

At the same time, we found that competing countries are building the confidence of importers by shipping uniformly high quality fruit. They have made great strides in quality control,

and their packaging and grading standards are closely tied to the needs of the London buyers.

As an example, most countries use only one set of export standards and ship only one grade of fruit to the London market. U. S. fruit is often marked with a bewildering variety of Federal and State grades. For instance, few importers are aware that "U.S. Fancy," "Washington Fancy," and "Virginia Fancy" grades for apples all have different requirements. This confusion could well turn some of these importers to other countries for their supplies.

We also found many ways in which American exporters could profit from a closer study of the London market. Take apples, for instance. Britons prefer green varieties of eating apples, like our Newtowns and Golden Delicious. Apples that show a chance to yellow are discounted. We were told that shipments labeled "Yellow Newtowns" are discounted even when the apples are actually green!

Another peculiarity of the London market is that apples are retailed by the pound. As a result, the variable net weights of cartons of American apples were a frequent complaint of London dealers. Other countries generally keep their weights more uniform than we do.

With other countries anxious to sell apples in London, and the marketing season for Britain's own favorite, Cox Orange Pippin, lengthened several months by controlled-atmosphere storage, we simply cannot afford to give away these competitive advantages.

Apples are only one example. Similar cases could be cited for many of our other fruit exports.

Generally, we found that American

fruit seemed to stand the trip across the Atlantic fairly well.

Some of the U. S. fruit, especially Emperor grapes, failed to match the competition, though, because it was only of fair condition upon arrival. Only top quality U. S. fruit can successfully compete with the other fruit which we saw in the stalls of Covent Garden.

### NEW GRAIN MACHINE

*(Continued from page 5)*

operator can count the number of spots. The paper is finally rewound on a spool for easy handling and storage, or for later reexamination.

For the time being, this AMS machine remains nameless because the researchers, like many parents, have had difficulty deciding on a name for their "baby". A more scientific and detailed description of this new detection device and its various parts will appear soon in the *Journal of Economic Entomology*. Upon publication, reprints of the article may be obtained from the Marketing Information Division, AMS, USDA, Washington 25, D. C.



Growth Through Agricultural Progress